

**Session: Biochemistry**

**INSULIN SIGNAL TRANSDUCTION PATHWAY: ACTIVATION OF KEY  
PROTEINS DOWNSTREAM OF PI-3 KINASE**

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Insulin is a hormone produced by the beta cells in the pancreas. Insulin can affect many metabolic actions in the body such as glucose uptake, glycogen synthesis, DNA and protein synthesis and gene expression. Thus, it is a very important metabolic regulator in the body. Insulin induces its effects by binding to the insulin receptor on the plasma membrane, resulting in autophosphorylation of the receptor and phosphorylation of key proteins involved in the insulin signal cascade. One of the key roles of insulin is in stimulating glucose uptake into the cells for use in metabolic pathways. For this to take place, the activation of the PI 3-kinase signaling pathway appears to be needed. Recently, Akt has been identified as a downstream target of PI 3-kinase and its activity is dependent on the activation of the pathway. Recent studies have shown that Akt may be involved in glycogen synthesis and glucose transport in adipose tissue. In this study, we investigated whether or not insulin increased the activity of Akt in liver cells in culture and then whether or not insulin-mimetics, compounds that can stimulate insulin mediated events through a non-receptor mechanism, could also increase the activity of Akt.

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